

are evaluated and preventive measures involving policy and regulation as well as engineering design criteria are suggested. Auth.

## Influence of dynamic loads due to explosions or earthquakes

1818  
HENDRON, AJ            UNIV. ILLINOIS, URBANA, USA  
DOWDING, CH           MASS. INST. TECHNOL, USA  
Ground and structural response due to blasting.  
Conference. 7F, 2T, 8R.  
PROC. THIRD CONGRESS, INT. SOC. ROCK MECH. DENVER, 1974,  
V2, PART B, 1974, P1359-1364.

## Experimental and numerical techniques

1819  
DOVNAROVICH, SV  
Installation for measurement of vertical displacement in mass backfill. 3F.  
SOIL MECH. FOUND. ENGGNG, V11, N5, SEPT-OCT. 1974, P315-317.

# Comminution of Rocks

## Rock fracture under dynamic stresses

1820  
FEDULOV, AI            SIBER. BR. ACAD. SCI. NOVOSIBIRSK, USSR  
Breaking of the rock by dynamic load of impact pneumatic hammer. Conference. 4F.  
PROC. THIRD CONGRESS, INT. SOC. ROCK MECH. DENVER, 1974,  
V2, PART B, 1974, P1395-1398.

1821  
AVERY, RT            UNIV. CALIF. BERKELEY, USA  
KEEFE, D            UNIV. CALIF. BERKELEY, USA  
BREKKE, TL           UNIV. CALIF. BERKELEY, USA  
Use of intense sub-microsecond electron bursts to produce rock shattering. Conference. 8F, 2T, 1R.  
PROC. THIRD CONGRESS, INT. SOC. ROCK MECH. DENVER, 1974,  
V2, PART B, 1974, P1415-1420.

1822  
CLARK, GB            UNIV. MISSOURI-ROLLA, USA  
LEHNHOFF, TF        UNIV. MISSOURI-ROLLA, USA  
Thermal-mechanical fragmentation of hard rock-field tests. Conference. 11F, 2R.  
PROC. THIRD CONGRESS, INT. SOC. ROCK MECH. DENVER, 1974,  
V2, PART B, 1974, P1428-1433.

1823  
ROWLEY, JC           UNIV. CALIF. LOS ALAMOS, USA  
Rock melting applied to excavation and tunnelling. Conference. 7F, 1T, 16R.  
PROC. THIRD CONGRESS, INT. SOC. ROCK MECH. DENVER, 1974,  
V2, PART B, 1974, P1447-1453.  
The mechanisms of rock and soil melting are reviewed, and temperatures of about 1800K are shown to be sufficient to melt most rocks and soils encountered in drilling and tunnelling. Laboratory and field tests of several different electrically powered refractory-metal rock-melting penetrators have illustrated the unique role of the fluid melt in affording new solutions to the problems of ground support and materials handling. Auth.

1824  
THIRUMALAI, K       MIN. RES. CENT. BUR. MINES, TWIN CITIES, USA  
CHEUNG, JB           MIN. RES. CENT. BUR. MINES, TWIN CITIES, USA  
Combined thermal energy processes for hard rock fragmentation. Conference. 16F, 3T, 7R.

PROC. THIRD CONGRESS, INT. SOC. ROCK MECH. DENVER, 1974,  
V2, PART B, 1974, P1460-1467.  
The principles and effectiveness of combination methods for breaking rocks using thermal energy to initiate sub-surface fractures and rock weakening are discussed. Based on theoretical predictions of water jet cutting of thermally weakened rocks, a thermomechanical combination process for hard rock kerfing is advanced.

## Drilling

See also abstract: 1783.

1825  
MOSKALEV, AN  
TANTSURA, VA  
SOLOGUB, SI  
Increasing the effectiveness of thermal and mechanical drilling. In Russian. Textbook. 106R.  
MOSCOW, NEDRA, 1973, 106P.

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VAN THIEL, M           UNIV. CALIF. LIVERMORE, USA  
WILKINS, M           UNIV. CALIF. LIVERMORE, USA  
MITCHELL, A          UNIV. CALIF. LIVERMORE, USA  
Shaped charge sequencing. 8F, 11R.  
INT. J. ROCK MECH. MIN. SCI. GEOMECH. ABSTR., V12, N9, SEPT. 1975, P283-288.

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ROLLINS, RR           UNIV. MISSOURI, ROLLA, USA  
CLARK, GB            UNIV. MISSOURI, ROLLA, USA  
BROWN, JW           MIN. ENF. SAF. ADMIN. DENVER, COLO. USA  
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JACKSON, RE           M. MARIETTA LABS. BALTIMORE, USA  
MACMILLAN, NH       M. MARIETTA LABS. BALTIMORE, USA  
WESTWOOD, AR       M. MARIETTA LABS. BALTIMORE, USA  
Chemical enhancement of rock drilling. Conference. 7F, 14R.  
PROC. THIRD CONGRESS, INT. SOC. ROCK MECH. DENVER, 1974,  
V2, PART B, 1974, P1487-1493.

## Blasting

See also abstract: 1818.

1829  
BALBACHAN, IP  
SHLOIDO, GA  
IURKO, AA  
Breaking up frozen ground with explosives. In Russian. Textbook. Refs.  
MOSCOW, NEDRA, 1974, 104P.

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BHANDARI, S           UNIV. NEW SOUTH WALES, AUS  
VUTUKURI, VS        UNIV. NEW SOUTH WALES, AUS  
Rock fragmentation with longitudinal explosive charges. Conference. 8F, 20R.  
PROC. THIRD CONGRESS, INT. SOC. ROCK MECH. DENVER, 1974, V2,  
PART B, 1974, P1323-1342.  
Utilizing longitudinal explosive charges breaking to bench geometry, fragmentation studies were conducted and it was found that Livingston's crater theory is also applicable for longitudinal charges.